



WEATHER

Nevada has experienced a record-setting winter with ominous atmospheric river systems passing through the region causing intense storms of which the state hasn't seen in over a decade. Experiencing an "atmospheric river" is like having a river of water above your head. The term atmospheric river has only been around since 1998, when MIT researchers Zhu and Newell coined the term to help people understand the concept of vast amounts of water vapor. Where is all this water is coming from? Atmospheric Rivers result from the action of winds associated with a storm that collects moisture into a narrow region just ahead of the cold front where low-level winds sometimes exceed hurricane strength. Zhu and Newell found that most of the water vapor was transported in relatively narrow regions of the atmosphere (90% of the transport occurred typically in four to five long, narrow regions roughly 250 miles wide), so the term atmospheric river was coined.

Historically, northern Nevada's biggest floods occur during the winter about every 10 to 15 years. However, from recent weather events, we know that flash flooding can occur year round. Knowing what to do before, during and after a flood, or an extreme weather system, can save lives, protect pets, livestock and help minimize property damage. The Project WET (PWET) Guide contains lessons to help students understand conditions that impact flooding and actions to help minimize future impacts when nature rules.

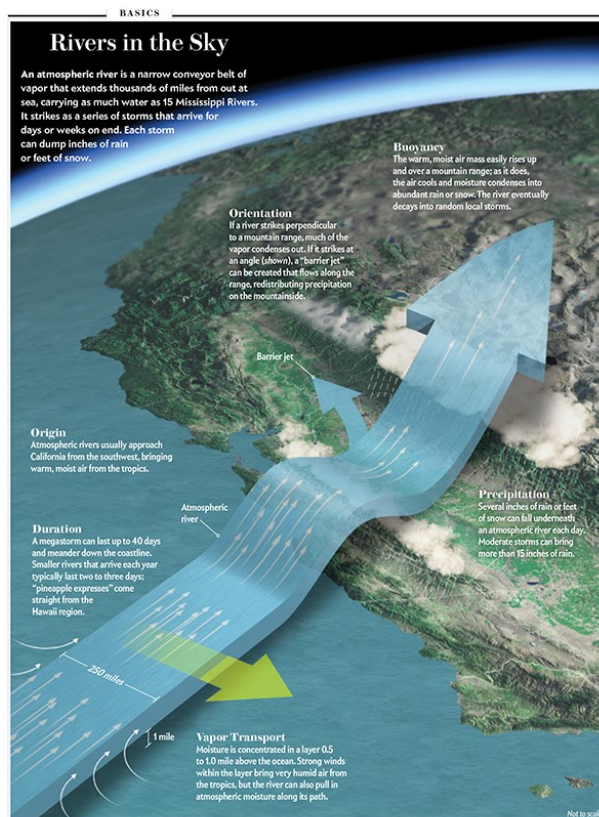


Illustration by Don Foley, for SCIENTIFIC AMERICAN

For enlarged image click [here](#).

It's important to understand that a **water-shed** is *where the water sheds*. Think of a watershed as a wash basin that collects all the water within a specific area and drains to a body of water or catchment. As water (precipitation) collects and flows downhill, it accumulates in soil, groundwater, creeks and streams, generally making its way to a larger river. Watersheds are typically named for the river flowing through them, like the Humboldt River Watershed or the Colorado River

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Watershed. Larger rivers typically flow to ocean waters, except in the case of Nevada's Great Basin where watersheds flow to a terminal lake or evaporate in a terminal sink.

The Project WET activity, (**Seeing Watersheds**, page 187), helps learners identify and map watershed boundaries by tracing along ridge lines of the highest elevation points of the surrounding

topography. Precipitation that falls outside of this elevated border will flow into an adjacent watershed. Our environment, our economy and our society all depend on a vibrant and healthy watershed. Drainage from rivers, lakes, and wetlands comprise a watershed, yet it also includes infrastructure, neighborhoods, forests, farms, parks, parking lots and open space. *We all live in a watershed; we work and play in one.*

Students can learn essential components of watersheds and build vocabulary while exploring the Project WET activity, **River Talk** (page 175). This lesson introduces terms, conditions and concepts to study and understand watersheds. To help understand concepts and the interdependence of multiple **ecosystems** within a complex system, the lesson makes use of analogies to compare watersheds to the human body, road systems and trees.

Project WET activity, **My Water Address, Take Action** (p. 433) recognizes the interconnectedness between the natural and developed landscape that entwines many of our daily routines. Over time local landscape and structures change due to growth and development. Do you live in a mountainous area or in the foothills? Do you live in a valley or close to a river? Awareness of transportation routes, landforms and topography, stability of slopes and soil, and the need for being prepared becomes eminent when nature becomes unleashed. Know your risk. Whether you live near the foot of a mountain canyon, a dry wash, or on the floor of a broad river valley, preparations ahead of time mitigate damaging storm events. Emergency preparedness and education help families

Pollution collects on surfaces such as roofs, sidewalks, driveways, and our yards. These pollutants are carried away with stormwater as it rains or melts (precipitation). Pollutants make their way into the rivers, lakes, and groundwater, and negatively impact the health of many ecosystems, fishes, wildlife and humans.



and communities before, during and after severe weather events.

How we develop and live in our watershed has a direct link to the amount of surface runoff generated during weather events. When water runs quickly over impervious surfaces, do problems arise? Impervious surfaces (rooftops, roads, parking lots) accumulate water quantities and increase water velocity. Project WET activity, **Color Me a Watershed** (p. 135) helps learners compare changes in land uses and its' effect on water movement. Permeable surfaces, (open space, trees, shrubs, plants) s-l-o-w the f-l-o-w and allow w-a-t-e-r to infiltrate and recharge groundwater. Do you have ideas for controlling the impact of stormwater? Perhaps your investigations can lead to reduced surface runoff, water quality improvement and flood controls.

Storm water collects pollutants from widely-dispersed areas, known as nonpoint source (NPS) pollution because it cannot be linked to one identified source. NPS pollution generated from a community or neighborhood may include fertilizers, pesticides, manure, oil, salts, chemicals, grease, detergents or eroding soils. NPS pollution consists of contaminants deposited on impervious surfaces which are washed off during storm events into streets, storm drains and ditches, and ultimately empties into local water bodies. Project WET activity, **Blue River** (page 135) simulates water movement during seasonal changes and weather events in a watershed. Also covered in the lesson

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are other weather-related events, such as storm cell development or rapid snowmelt, and its effect on streamflow (velocity and volume) in a watershed. Students create hydrographs to understand how streamflow in cubic feet per second (cfs) varies based on storm events and seasonal changes.

Water resource managers collect streamflow measurements to help predict surpluses and shortages, allocate supplies, and predict high or low flows. Volume and velocity (cubic feet per second or cubic meters per second) are used to generate hydrographs. A calculation based on 100 years of data is more reliable than a 25-year record. Project WET activities, ***Back to the Future*** (page 307) and ***High Water History*** (page 321) help students understand

Did You Know?

- Flooding kills more people than any other natural disaster.
- One (1) inch of flood water indoors can cause \$10,000 of damage.
- The best, most cost-effective way to prevent future flood damage and deaths is to keep natural floodplains open and free of development.

the probability and concepts of a 10, 100, or 500-year flood occurrence, pros and cons of building in the floodplain, and the economic losses caused by floods.

Water, or lack of, plays a prominent role in natural disasters. Humans build structures and use technology for protection from wind, rain, cold and heat; allowing us to inhabit every climate in every corner of the globe. We build on floodplains, farm in arid desert lands, and expand to build on slopes and shorelines with minimal vegetation, but are shocked when weather and nature become high dollar “disasters”. Whole communities are impacted; lives can be lost, businesses ruined. Project WET activity, ***Nature Rules*** (page 277), helps learners hone their writing skills, creating literary headlines and reporting news stories about naturally occurring events that become “disasters.”

It goes without saying that restoration of damages is like trying to put ***Humpty Dumpty*** (page 335) back together. It may never be quite the same as before. But then, we don’t miss the water until the well runs dry. Students will enjoy learning other water related sayings of various cultures from around the world in Project WET activity, ***Raining Cats and Dogs*** (page 521).

Vocabulary

Ecosystem: A community of living organisms and their interrelated physical and chemical environment.

Floodplain: A normally dry land area that is susceptible to being inundated by water from any natural source, such as flat areas alongside many rivers, streams and lakes.

Surface Runoff: That part of the runoff which travels over the soil surface to the nearest stream channel. This applies to snowmelt or irrigation water in excess of what can infiltrate the soil surface and be stored in small surface depressions. Surface runoff constitutes a major transporter of Non-Point Source (NPS) Pollution.

Hydrograph: A representation of water discharge over time.

Watershed: An area of land that drains water to a particular river, lake or a downslope catchment area. Land area confined by topographic land forms (divides); enclosed by a continuous hydrologic drainage divide and lying upslope from a specified point on a stream; a region bounded by a water-parting divide and draining ultimately to a particular water course or body of water.

The impact of weather events occur throughout the year, so it’s important to retain a general sense of emergency preparedness. State and local agencies, organizations and residents are encouraged to participate in awareness campaigns and outreach activities. Information on how to become involved and other critical preparedness information can be found at www.NevadaFloods.org.

"Wish-Cycling"

Imagine you have something in your hand and you are standing in front of the recycling bins—a to-go coffee cup, a Styrofoam take-out container, the foil from your morning bagel. You aren't sure if it can be recycled; it *should be* recyclable. But is it? Do you err on the side of recycling and throw it in the bin?

If it doesn't belong, the recycling facility can sort it and dispose of it, right? Not so fast. . .

According to [Earth 911](#), recyclers define this well-intentioned, but ultimately harmful practice as "Wish-cycling". Loosely defined as "the practice of tossing questionable items in the recycling bin, hoping that somehow they can be recycled."

Unrecyclable items left in recycling bins cost time and money, and can create even more waste. Recycling facilities process materials with complex machines programmed to sort out items the recycling program collects. Non-acceptable materials in the mix can jam the machinery. Plastic bags, shredded paper or dirty diapers (yes, people really put them into recycling bins!) can cause the whole system to shut down until the jam is cleared, which cost time and money. Recycling businesses operate to collect, sort and sell recyclable materials, of which profit margins are usually slim. Contamination and processing delays that cost the operator time and money can make profits quickly disappear.



Contamination happens when non-recyclables get mixed with recyclable commodities. They have to be sorted out, and disposed of in the landfill. If non-recyclables pass through the sorting process and are baled with recyclables, this can contaminate an entire batch of recyclables making it unsuitable for the end user and resulting in the entire batch of material being disposed of.

TOP 5 REASONS TO RECYCLE

CONSERVES NATURAL RESOURCES like trees, water and minerals—for future generations.

REDUCES THE NEED FOR LANDFILLS: when materials are recycled, less waste is sent to disposal facilities.

PREVENTS POLLUTION and reduces greenhouse gas emissions.

SAVES ENERGY by eliminating the need to extract and process raw materials.

CREATES JOBS in the U.S. for both the recycling and manufacturing industries.

Coincidence or Not???

QUOTE OF THE MONTH

If . . .

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

EQUALS . . .

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26

THEN . . .

K + N + O + W + L + E + D + G + E

11 + 14 + 15 + 23 + 12 + 5 + 4 + 7 + 5 = 96%

H + A + R + D + W + O + R + K

8 + 1 + 18 + 4 + 23 + 15 + 18 + 11 = 98%

Both are important, but fall just short of 100%

BUT A + T + T + I + T + U + D + E

1 + 20 + 20 + 9 + 20 + 21 + 4 + 5 = 100%



WHAT CAN I RECYCLE?



Recycling right
is better than
wish-cycling.

ALSO RECYCLABLE BUT NOT IN CURBSIDE BIN

PLASTIC BAGS
AND WRAPS



ELECTRONICS



TEXTILES



TOP 10 IN THE BIN

1. CARDBOARD
2. PAPER
3. FOOD BOXES
4. MAIL
5. BEVERAGE CANS
6. FOOD CANS
7. GLASS BOTTLES
8. JARS (GLASS & PLASTIC)
9. JUGS
10. PLASTIC BOTTLES AND CAPS

Learn what can be recycled
in your program and
follow its guidelines.
Find out about
your local recycling
options here:
www.iwanttoberecycled.org



**KEEP AMERICA
BEAUTIFUL**



3 Ways Education Protects Our Vital Source Water

Could today's young people solve the looming water crisis? Ongoing droughts in the desert Southwest, worsening floods in the East, lead in water in the Midwest and aging infrastructure all over are certainly daunting. However, gloom and doom don't have to triumph. America's water future depends on choices that we make — and opportunities we provide to our children and youth.

The water cycle constantly refreshes the world's water supply. The water that is available to us now is the same water that has always been available. In fact, the water that you're drinking today may have spent time in a glacier, an underground aquifer, a cloud — even a dinosaur.



However, the extension of that concept means that the water we have now is also the only water that will ever be available. Water must therefore be used and managed carefully to ensure its safety for future generations. Since water is a renewable resource, young people must learn how to conserve water — and how our actions can impact water quality. That's where water education comes in.

Kids who learn about water in interactive ways take their new awareness to their parents, siblings and the larger community — particularly when education is paired with action.

1. To clean and to conserve

For example, using the [Clean and Conserve program](#), a teacher, scout leader, parent or anyone else interested in promoting water knowledge can, free of charge, take an online training course and download a lesson about the effects of trash and other potential pollutants on water close to home and downstream. They can then volunteer to lead the lesson in the community, finishing with a trash cleanup to protect the local watershed.

Dennis Nelson, President and CEO, Project WET, MediaPlanet supplement published in USA Today, November 2016.

2. Setting footprints

[Our Watery World](#) offers science lessons to teach kids about water conservation, water footprints and everyday actions anyone can take to make a difference. As with Clean and Conserve, Our Watery World provides water conservation classroom materials and resources, free of charge.

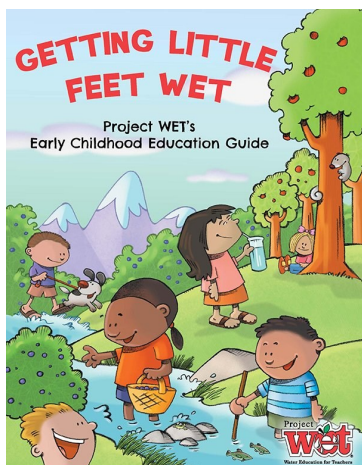
3. Online empowerment

Another free option for encouraging water awareness is the [DiscoverWater.org](#) interactive website. Designed specifically for elementary and middle school students, the site offers nine different activities covering everything from oceans to preventing the spread of germs. Downloadable parent-teacher materials can help deepen the experience. The website also offers a "Take Action" backpack that students can "fill" with real-world ways to conserve and protect water.

Water education that starts when kids are young can positively impact behaviors and attitudes for years to come. By encouraging the next generation of water stewards to make responsible choices, we can all be a part of solving water issues that we have now and will have in the future.



Early Childhood



As many of you know, there is a difference in working with young children and early learners. Many Early Childhood Educators have patiently waited for the release of Project WET's early childhood curriculum. [Here it is!](#)

Developed specifically for teachers working with young children (ages 3-6) and in coordination with early childhood experts and educators, **Getting Little Feet Wet** is Project WET's early childhood curriculum. **Getting Little Feet Wet** contains 11 interactive, hands-on activities for young learners to explore different aspects of water—from water properties to water sounds.

Each activity offers Pre-K and K-2 options and is correlated to educational standards. **Getting Little Feet Wet** is available both as a digital and printed book. In the digital book, readers can click on suggested resources, specific materials and additional links to go directly to a webpage with more information on the resource or product.

Digital e-books will be available for purchase and download **starting March 22, 2017**. Printed version availability TBD.



DiscoverWater.org is a free interactive classroom tool to teach kids about water. The website offers interactive activities and quizzes for students including Science Note booking pages and printable resources for teachers. All correlated to Common Core standards.

Upcoming Events

17th Truckee River Watershed Snapshot Day

Friday, May 19th—lower Truckee River

Saturday, May 20th—Tahoe Basin and Truckee

Students, educators and community are invited to participate in an environmental field study of the Truckee River Watershed! Snapshot Day is hands-on education conducting real science and a career-exploration opportunity to interact with water resource professionals. Learn ecology, environmental science and hydrology during this ultimate educational experience!

Snapshot Day engages young adults in the field, and helps instill in them the importance of environmental stewardship and science-based observation of watersheds.

WASHOE COUNTY

To register contact Mary Kay Wagner
775-687-9454, mkwagner@ndep.nv.gov

North Lake Tahoe Sarah Vidra, 775-832-1284, sgv@ivgid.org

Middle Truckee Eben Swain, 530-550-8760 x 7, ecasey@truckeeriverwc.org

South Lake Tahoe Savannah Rundroff, 530-541-5388, Savannah@keeptahoeblue.org



Earth Day Celebrations

SOUTHERN NEVADA Fun Festivities Exhibits

April 22 9a.m. - 5p.m.

GREENFest held in **Downtown Summerlin** under the shaded Pavilion. Nestled in the foothills of the west rim of Las Vegas with Redrock Canyon as a backdrop. This venue provides a unique combination of LEED Green buildings in a downtown environment that speaks sustainability by design.

April 28—May 6 Las Vegas Science & Technology Festival. Visit LasVegasScienceFestival.com



NORTHERN NEVADA Fun Festivities Exhibits

April 23 11 - 6p.m.

Reno Earth Day transforms twenty acres of Idlewild Park into over 350 exhibits and activities for all ages. Arts & crafts, sustainability businesses and resources and local non-profit organizations. Activities include 4 stages of entertainment, specialty foods, drinks, workshops, rallies, games and prizes.

April 22 Fallon Earth Day Celebration hosted by Fallon Paiute Shoshone Tribe 10a.m.—2p.m.

Visit www.facebook.com/fallonearthday



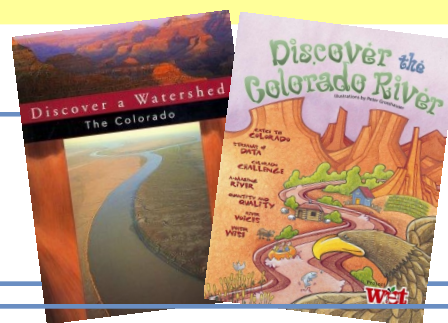
Upcoming Workshops

DISCOVER A WATERSHED —
the Colorado River
March 25 — Lake Mead!

CLARK COUNTY

Register now on Pathlore.

½ credit



FORCE OF WATER: TERMINAL WATERSHEDS

DOUGLAS COUNTY

April 8 8:00 a.m. - 5:00 p.m. ½ credit

Zephyr Cove Elementary School, Zephyr Cove

Explore the new unit developed with the DRI Green Box program: Terminal Watersheds. Also learn about NPS pollution impact on water quality, effects of flooding,

and the history of water in Nevada.

Educators who attend this training will walk away with a Project WET curriculum guide and information of how the new environmental center can support an educational day at the lake!

To register contact Roger Cramer, 775-392-1495 RCRAMER@dcsd.k12.nv.us

FORCE OF WATER: TERMINAL WATERSHEDS

ELKO COUNTY

April 28 5 - 8 p.m. AND April 29 8:30 - 2:00 p.m.

Great Basin College, Elko ½ credit Lunch is provided!

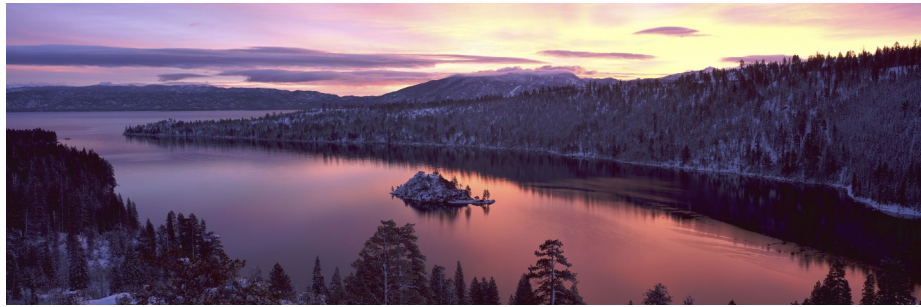
Learn about terminal watersheds, NPS pollution impact on water quality, the effects of flooding and the history of water in Nevada.

Check out the new Force of Water Green Box. Receive a Project WET Curriculum Guide and resources to implement lessons in your classroom.



To register contact
Craig Rosen
702-862-5332
Craig.Rosen@dri.edu

Scholarship Opportunity



2017 Family Nature Summit Scholarship Opportunity

**Granlibakken Tahoe in Tahoe City, CA
August 7 - 13, 2017**

Originally organized by the National Wildlife Federation, [Family Nature Summits](#) is continuing its 40+ year old tradition as a conservation and nature-oriented week-long environmental learning experience to educate attendees and help participants be good stewards of the Earth. Despite its name, Family Nature Summit is for everyone – singles, couples and families of all ages, with typically over 300 attendees.

It is a Family Nature Summit tradition to give a teacher and a student scholarship to one or more deserving applicants in the state where the Family Nature Summit is taking place. Since Lake Tahoe is a bi-state treasure shared with California, scholarships will be awarded to Nevada and California applicants who demonstrate a love of nature and a willingness to share that love with others. The full scholarship covers registration fees and room/board (double occupancy) for the selected teacher/student + one guest.

[Teacher Scholarship](#) Application deadline extended to April 15, 2017.

Youth (ages 8-18): [Craig Tufts Scholarship](#) Application
deadline: 5pm EST, Friday, March 24, 2017

[Apply now!](#)



Click to check out our [Facebook page!](#)



Follow Nevada Recycles to learn about
- Creative ways to reuse, reduce, and recycle
- Local and global waste reduction efforts and issues



The Nevada Division of Environmental Protection (NDEP) provides resources and funding for numerous educational and outreach programs and efforts throughout Nevada. NDEP sponsors and endorses Project WET and Recycling programs and curriculum through two Bureaus, Water Quality Planning and Waste Management.

Patricia Moen (pmoen@dcnr.nv.gov)
Northern Nevada Recycling Coordinator
Rachel Lewison (rlewison@dcnr.nv.gov)
Southern Nevada Recycling Coordinator

Waste Management Recycling Hotline
p: 1-800-597-5865



Mary Kay Wagner (mkwagner@ndep.nv.gov)
Environmental Scientist / Project WET Coordinator

Bureau of Water Quality Planning
p: 775-687-9454
www.ndep.nv.gov/edu



For information on **Discover a Watershed: the Colorado River** and **PWET Workshops** in Clark County contact: Heather Whitesides, Aquatic Invasive Species Education Specialist, Lake Mead National Recreation Area, 702-293-8659, heather_whitesides@nps.gov